Indiana "Pay-As-You-Throw" Tool-Kit
Introduction: Background, Goals, and Objectives

Background

The Indiana General Assembly passed House Enrolled Act 1240 to encourage waste reduction, reuse and recycling in an effort to reduce reliance on landfills as the primary disposal method for municipal solid waste (MSW). The Indiana Department of Environmental Management Office of Pollution and Prevention (IDEM-OPPTA) has advocated waste reduction, reuse, and recycling as methods to meet HEA 1240's 35% and 50% waste reduction targets.

Due to the economic incentive to reduce, reuse, and recycle present in "Pay-As-You-Throw" (PAYT) programs, IDEM-OPPTA has advocated this financing approach for municipal solid waste management programs. Many solid waste management districts identified PAYT financing as part of their *Solid Waste Management Plans* to guide communities in meeting HEA 1240's waste reduction targets

AISWMD PAYT Technical Assistance Project

In 1999, IDEM-OPPTA contracted with the Association of Indiana Solid Waste Management Districts (AISWMD) to assist local governments and regional solid waste management districts consider the economic feasibility of "pay-as-you-throw" financing for municipal solid waste management programs. Region 5 of the US Environmental Protection Agency (EPA) provided a grant to the state of Indiana to conduct this program. The ***Indiana "Pay-As-You-Throw" Tool-Kit*** represents the culmination of this project.

Indiana "Pay-As-You-Throw" Tool-Kit Goals and Objectives

The primary goal of the Indiana "Pay-As-You-Throw" Tool-Kit is to guide local governments and solid waste management districts through the MSW finance planning process necessary to implement "Pay-As-You-Throw" rates. A related goal is to provide an understanding of the factors that influence municipal solid waste costs, existing financing approaches and how "Pay-As-You-Throw" rates can be applied—in any MSW setting—to ensure economically sustainable MSW programs.

The Indiana "Pay-As-You-Throw" Tool-Kit extensively draws upon planning materials developed by the USEPA. The Indiana "Pay-As-You-Throw" Tool-Kit follows the EPA's "Six Step" Pay-As-You-Throw" planning process. The steps in EPA's Six-Step PAYT Planning Process are:

(1) Gather community solid waste and population characteristics;
(2) Identify and compile existing municipal solid waste program costs;
(3) Identify and compile MSW program revenue sources;
(4) Develop alternative "pay-as-you-throw" rate structures;
(5) Project MSW revenues based on alternative rate structures; and
(6) Evaluate the suitability of alternative rate structures based on revenue requirements.

Indiana PAYT Tool-Kit Builds on EPA Planning Process

The AISWMD PAYT Technical Assistance Project utilized the EPA Six-Step Planning Process. During the course of working with participating communities, two trends emerged:

(1) Communities wanted additional assistance identifying MSW costs and locating where the cost information could be accessed; and,
(2) Communities were interested in developing a variety of PAYT rate structure options prior to selecting a PAYT program option.

To address these needs, the consultant developed two devices to expand the PAYT Planning Process beyond the components found in the EPA Six-Step Process. These additional technical assistance devices are:

- The Indiana PAYT Model Timeline
- The AISWMD Local MSW Information Form, and
- The Indiana Modified PAYT Rate Structure Computerized Spreadsheet.

These materials are explained in detail later in this document.

Indiana "Pay-As-You-Throw" Tool-Kit Components

The Indiana "Pay-As-You-Throw" Tool-Kit is organized into the following sections:

(1) Introduction to "Pay-As-You-Throw" Financing options;
(2) MSW Economics and Financing Methods;
(3) Gathering MSW Data Necessary for EPA Six-Step PAYT Planning;
(4) Considerations in Selecting an appropriate Pay-As-You-Throw program;
(5) Existing PAYT rate structure development techniques;
(6) Using the Indiana Modified PAYT Rate Structure Spreadsheets;
(7) Strategies to Address Barriers to PAYT; and,
(8) Conclusion and Implications for Future PAYT Efforts.

The Indiana "Pay-As-You-Throw" Tool-Kit offers guidance to direct and organize local PAYT planning activities. The Tool-Kit provides three computerized rate structure-modeling programs to expedite the development and evaluation of competing PAYT alternatives.

The Indiana "Pay-As-You-Throw" Tool Kit provides appendices containing PAYT information and planning materials to complement the Tool-Kit document.

Public Information and Promotion of PAYT Programs

The US EPA's "Pay-As-You-Throw" Tool-Kit devotes much attention to the public information and promotion of PAYT financing. These materials provide "model" presentation scripts and visual aids. The Tool-Kit includes a video on local PAYT

planning that provides an excellent background for understanding PAYT rate structures for residential MSW service.

In an effort to avoid duplication of effort, the Indiana "Pay-As-You-Throw" Tool-Kit will not address educational strategies or promotional devices for local PAYT program proposals. The Indiana "Pay-As-You-Throw" Tool-Kit will include topics and information that can and should be included in education and promotional materials.

Contact for Additional "Pay-As-You-Throw" Information

Individuals or communities seeking additional information regarding "Pay-As-You-Throw" financing for municipal solid waste may contact the Indiana Department of Environmental Management – Office of Pollution Prevention and Technical Assistance at (800) 988-7901.

Indiana "Pay-As-You-Throw" Tool-Kit
Section 1: Introduction to "Pay-As-You-Throw" Financing

"Pay-As-You-Throw" in Municipal Solid Waste

"Pay-As-You-Throw" for municipal solid waste service is any financing mechanism that links how much a household pays for trash service to the amount of trash thrown away. While this is a new approach for residential MSW trash service, it is the traditional basis for paying for commercial trash service. In commercial trash service the size of a trash container and the frequency of collection determines the cost of trash service. "Pay-As-You-Throw" introduces a "volume-based" component into residential MSW program financing.

Factors Contributing to the Popularity of PAYT

Many refer to "Pay-As-You-Throw" for MSW service as a "utility approach" for financing since it is similar to the way households pay for utilities such as water, electricity, natural gas, or telephone service. Three reasons account for the historic and current popularity of PAYT financing.

Fairness of PAYT Financing:

"Pay-As-You-Throw" for MSW residential service has existed for decades in "progressive" communities because it is considered an equitable method for recovering program costs from households who generate trash at different levels.

Reduced Reliance on General Fund:

Municipalities wishing to reduce reliance on the General Fund increasingly adopt user fees and variable-rate users. This is especially true in Indiana where cities and towns are limited to a 5% annual increase in the property tax levy.

Waste Reduction, Reuse, and Recycling Promotion:

More recently, "Pay-As-You-Throw" financing is recognized for its ability to encourage waste reduction and recycling. Based on published reports PAYT financing has reduced MSW –on average—by 40%. This reduction is significantly higher than the trash volume diverted by most recycling programs.

Many solid waste program managers advocate "Pay-As-You-Throw" financing because it extends the life of landfills as households generate less trash. In this way, PAYT promotes conservation habits similar to those generally associated with natural resource conservation. The parallel with the "utility approach" is clear in this situation:

> ***Conservation to improve the environment will motivate some to change; conservation to save money will motivate a great many more to change***.

Waste Reduction without Programming Costs

An additional benefit of PAYT is that significant waste reduction can be accomplished at a much lower cost than most waste diversion programs. The reason for this is simple:

PAYT is not a program requiring a new fleet of trucks or separate processing, but a financing mechanism.

PAYT Financing Options

PAYT for MSW involves any financing mechanism that responds to changes in the amount of trash generated. Generally, two features characterize PAYT financing systems. These are:

(1) Disposal unit container and volume and,
(2) Rate structure type.

Trash Disposal Unit Container and Volume

PAYT programs include a "trash disposal unit" as part of the volume-based rate structure. Disposal units are usually a can or a bag with a corresponding volume or weight limit. The volume of the unit—in gallons—corresponds to the number of pounds in a one-to-one ratio. Some programs include a can limit or bag limit with an extra charge for disposal units over the can limit.

The disposal units are purchased *in advance* using:

(1) Specially printed adhesive stickers;
(2) Specially-manufactured bags; or,
(3) Monthly household charge that may include a weekly trash volume level termed "can/bag limit."

Rate Structure Types

There are three types of rate structures for PAYT programs. Each is defined below:

Proportional/Unit-Based/Linear = These programs are financed in a one-to-one ratio of disposal units to cost. In this setting a household throwing away two cans/bags of trash pays twice as much for MSW service as a household throwing away one can/bag of trash. Generally, these programs use cans or bags as the units of trash. However, some technologically advanced programs have established "unit-based" programs in which billing is based on the pounds of trash generated.

Variable Container = These programs offer various service levels using different sized containers (e.g., 30-gallon, 60-gallon, 90-gallon). Depending on the costs to be recovered, the rates may be proportional or non-proportional. Some programs charge increasingly higher rates to discourage (penalize) households that do not reduce trash generation.

Modified/Two-tiered/Multi-tiered = These programs use one or more financing mechanism to recover program costs. At least one of the financing mechanisms is volume-based. This category evidences a great variety of PAYT options though most include a monthly household charge and a unit-based fee tied to the volume of trash generated. This category also includes programs that use "combination financing" that may include partial funding of MSW costs through the General Fund.

Major Varieties of PAYT Options

By combining the disposal unit and the rate structure, five major PAYT MSW program options emerge. These are identified as the following:

(1) Bag programs;
(2) Sticker or tag programs;
(3) Variable-sized can subscription programs;
(4) Modified/Two-tiered/Multi-tiered; or,
(5) Weight-based.

Indiana PAYT communities generally have modified, sticker programs, or bag programs. There are no variable-sized container or weight-based programs in the state.

Indiana "Pay-As-You-Throw" Program Database

The IDEM-OPPTA and AISWMD PAYT project created a database of existing "Pay-As-You-Throw" programs in Indiana. The list of local MSW programs—and PAYT program components—is offered as Appendix A of this Tool-Kit.

This database can be used to identify similar communities—in terms of collection arrangement, level of service, and households served—to allow modeling for prospective PAYT communities.

Popularity of Modified PAYT Programs in Indiana

Modified programs are very popular in the state of Indiana. This is consistent with PAYT patterns for the Midwest region of the country. Modified programs in Indiana fall into four categories:

- Monthly fee for household MSW service with a unit fee for each trash unit;
- Monthly fee for household MSW service, including a "can limit" with additional fee for excess trash;
- General Fund support for MSW service (partial or complete funding) with a unit fee for each disposal unit; and,
- General Fund support for MSW service (partial or complete funding) with a can limit that includes an additional fee for excess MSW units above limit.

Planning for PAYT Financing

Successful and sustainable "Pay-As-You-Throw" programs have developed rate structures that accurately link financing mechanisms to a community's MSW program components and citizen preferences. Developing an appropriate PAYT rate structure requires a thorough understanding of the MSW economics and financing. The next section discusses municipal solid waste economics and financing. This section introduces the concept of "fixed" and "variable" costs. Understanding these costs is of critical importance to developing an appropriate PAYT rate structure.

MSW Economics and Financing

PAYT rate structures are recognized as a more equitable means of financing MSW than General Fund or flat-rate user fees. To achieve this "equity" the rate structure must fairly and efficiently raise revenue from customers based on their "consumption" of MSW service. This section discusses the costs of residential MSW service, factors that impact those costs, and strategies to recover—finance—these costs.

"Fixed" and "Variable" Costs of MSW Service

Municipal solid waste programs, like any municipal service program, are comprised of two major cost categories: ***fixed costs*** and ***variable costs.*** Sustainable "Pay-As-You-Throw" rate structures recognize the differences in these costs and recovers these costs through appropriate financing mechanisms.

MSW Program "Fixed Costs"

Fixed costs are those expenses that are relatively constant regardless of changes in MSW volume. One may think of these as the costs of the "infrastructure" necessary to provide residential MSW service to a community. Just as a utility must invest in the infrastructure to provide water, sewerage, electric, natural gas, or telephone service, so too must municipalities "build" an MSW program capable of serving residents.

Examples of fixed MSW costs are:

- Collection crew salary costs (hourly costs, benefits, etc.);
- Collection equipment costs (debt service, rental, etc.);
- Equipment operation costs;
- Equipment maintenance costs;
- Administrative and support staff salary expense;
- Billing expense (monthly utility billing, delinquent collection, and payment processing);
- Public information and promotional costs,
- Physical facility costs (debt service or "rent" paid for building usage); and,
- Indirect costs (legal fees, insurance, utility fees, etc.).

Economists consider these "fixed costs" because once the MSW program is established, these expenses become unavoidable. A community needs to pay its personnel, its equipment costs, its facilities costs, and other expenses regardless of an individual household's consumption of service.

Mandatory Participation in Public Utility and Service Programs

Many communities and utilities require "mandatory participation" in services since the municipality or utility cannot "bypass" an individual household when creating the infrastructure or providing the service. "Mandatory participation" in a utility or MSW

program means that households are required to share in the financing of the program regardless of the household's willingness to actually consume the service provided. *Mandatory participation does not allow households to avoid the cost of a public utility or service program.*

MSW Program "Variable Costs"

Variable costs are those expenses that fluctuate with the consumption of a service by households. In an MSW setting, variable costs fluctuate with the volume of trash thrown away.

Examples of MSW variable costs are:

- Disposal fees or landfill charges billed on the basis of the tons collected;
- Processing fees charged by transfer stations or materials recovery facilities (MRFs) based on the tons collected;
- Transportation fees charged by a trucking company or separate municipal cost-center tasked to haul trash or recyclable materials to final disposal or processing sites;
- Special collections costs (bulk items, refrigerant-recovery charges, dumpster fees, etc.) that increase as the service is provided; and,
- Seasonal personnel costs hired to handle occasional "peaks" in MSW volume.

Because these variable costs fluctuate with the volume of trash, decreasing the amount of trash sent to landfills can reduce these variable costs. It is the incentive to reduce variable MSW costs that prompts many communities to introduce PAYT financing.

Public utilities use meters to measure a household's consumption of water, natural gas, or electricity. Residential MSW programs measure household consumption of trash service based on the number of cans or bags of trash. Some technologically advanced programs weigh trash set-outs and bills households for service by the pound.

While municipal solid waste programs are comprised of fixed and variable costs, there are factors that influence the types of fixed and variable costs that an MSW program will incur. These factors are described below.

Factors Influencing MSW Program Costs

Local municipal solid waste management program costs are influenced by two broad categories: community features and program features. Community features are the "givens" of a community over which local elected officials and MSW program managers have minimal control. "Program features" are MSW service components resulting from local decisions relating to residential MSW service. In contrast to community features, program features are entirely under the control of local decision-makers.

Community Features

"Community features" are demographic and geographic characteristics of a city, town, county, etc. that impact municipal solid waste management program costs. These features are identified as:

- Population;

- Number of households;
- Housing density;
- Service area size; and,
- Geographic features.

Local program managers exercise only limited control over these factors.

With respect to the economics of solid waste management, the most salient community feature is "collection density." This term refers to the number of miles necessary to travel to collect a single ton of trash. Generally, the higher the housing density the higher the collection density. Due to economies of scale, the higher the collection density the lower the unit cost for MSW services.

Program Features

Program features relate to the various MSW service components that contribute to program costs. In contrast to community features, program features are entirely within the control of local decision-makers. These features include the following MSW program considerations:

- Organization (municipal, exclusive contract, private subscription);
- Collection technology (automated, semi-automated, non-automated);
- Collection frequency (semi-weekly, weekly, twice-weekly, etc.);
- Point-of-collection (alley, curbside, or backdoor trash; curbside or drop-off recyclables);
- MSW services (trash, recycling, bulk items, brush chipping, leaf collection, HHW, etc.); and,
- Financing (general fund, utility billing, special assessments, and variable user fees).

Below are examples of how program features can influence MSW program costs:

- A municipal program involves hiring, training, compensating, and retaining a cadre of municipal collection personnel;
- Selecting non-automated collection technology means using a two- or three-person collection crew, increasing the labor-intensiveness of the collection program;
- Selecting automated collection can reduce labor costs as equipment costs increase;
- Utilizing co-mingled recyclables truck or curb-sorted separation vehicles can influence labor costs, equipment costs, and resale value of recyclables.

Because these community and program features can significantly impact the cost of providing residential MSW service, one must exercise caution in comparing costs between local MSW programs. If a community desires to make financial comparisons program managers must be sure to consider programs with similar size, level of service, and collection arrangement.

Financing for Local MSW Programs

Financing for MSW programs refers to the manner in which a community raises the funds necessary to pay for its residential MSW service. Communities use one or a combination of methods to fund residential MSW program expenses.

According to economists Peter Kemper and John M. Quigley, there are four predominant methods for financing MSW service. These financing methods are identified as:

General Fund = This arrangement involves raising funds from "ad valorem" taxes on property, income, personal property, etc.;

Special Assessment = This approach finances MSW through a special assessment which is collected along with local property taxes. These revenues are earmarked for a sanitary district, solid waste management district, or other special agency, which provides MSW service;

Flat-Rate User Fee = This is generally a monthly or quarterly fee billed to households for MSW service. It may be collected through a utility (water and/or sewer) billing system or a separate billing system; and,

Variable-Rate User Fee = These fees vary based on the level of service, volume of service, or other factors established in a community's rate structure. These fees may be billed to residences or paid in separate transactions.

Source: Peter Kemper and John M. Quigley, The Economics of Refuse Collection, pp. 91-92.

"Pay-As-You-Throw" financing is a "variable-rate user fee" system.

Implications of Financing for "Pay-As-You-Throw"

The existing MSW financing arrangement must be considered when a community is interested in introducing "Pay-As-You-Throw" financing. Anecdotal evidence suggests that PAYT fees are more readily accepted in communities that already impose some form of MSW user fees. Public acceptance is generally more difficult in settings where MSW programs are completely financed from General Fund revenues.

Current financing arrangement can shed light on a community's preference for financing MSW service. Prior to investigating PAYT financing, MSW planners should discuss current financing arrangement concerns with elected officials and/or decision-makers.

PAYT financing for MSW service does not necessarily mean all program costs are funded through the rate structure. Many communities use "combination" funding to subsidize program costs and facilitate public support for PAYT rate structures.

Indiana "Pay-As-You-Throw" Tool-Kit

Section 3: Gathering Local MSW Data Necessary for EPA Six-Step PAYT Planning Process

EPA Six-Step "Pay-As-You-Throw" Planning Process

The US EPA has researched local PAYT programs to identify the "best-management practices" for PAYT planning, rate-structure development and implementation. The culmination of this effort is the EPA PAYT Tool-Kit. The Tool-Kit identified a "Six Step Planning Process." These steps are identified below:

Step 1:	Estimate the Total Amount of Waste Generated
Step 2:	Determine the Components of the PAYT Program
Step 3:	Estimate the Costs of Current MSW Program
Step 4:	Develop Alternative PAYT Rate Structure Options
Step 5:	Project Revenues from Alternative PAYT Rate Structure Options
Step 6:	Refine PAYT Rate Structure to Develop PAYT Program Proposal

Indiana PAYT Tool-Kit Builds on EPA Planning Process

The AISWMD PAYT Technical Assistance Project utilized the EPA Six-Step Planning Process. During the course of working with participating communities, two trends emerged:

(1) Communities wanted additional assistance identifying MSW costs and locating where the cost information could be accessed; and,
(2) Communities were interested in developing a variety of PAYT rate structure options prior to selecting a PAYT program option.

To address these needs, the consultant developed three devices to expand the PAYT Planning Process beyond the components found in the EPA Six-Step Process. These additional technical assistance devices are:

- The Indiana PAYT Planning and Implementation Timeline;
- The AISWMD Local MSW Information Form, and
- The Indiana Modified PAYT Rate Structure Computerized Spreadsheet.

Indiana PAYT Planning and Implementation Timeline

This document provides a listing of the activities necessary to plan and implement a PAYT rate structure program for residential MSW service. This also provides a model timeline for accomplishing these tasks. This document is offered as Appendix C.

Indiana PAYT Planning MSW Information Form

The Indiana PAYT Planning Process developed a Local MSW Information Form to streamline the collection of data necessary to complete the PAYT planning process. The AISWMD PAYT Data Form is provided as Appendix B of this document.

Each community participating in the IDEM-OPPTA/AISWMD PAYT Technical Assistance Project was required to complete this form to facilitate completion of the PAYT Planning Process.

Indiana *"Full-Cost Accounting Report for MSW Programs"*
Those communities that completed the Indiana *Full-Cost Accounting Report for MSW Programs* will find the AISWMD PAYT Local MSW Information Form very familiar. The AISWMD includes much of the some information necessary to complete the former *Full-Cost Accounting Report.*

Using the AISWMD PAYT Information Form to Gather MSW Program Information
The AISWMD PAYT Information Form is divided into three sections. These sections are identified as:

Part A: Program Features and Community Considerations;
Part B: 2001 MSW Program Costs; and,
Part C: MSW Program Revenue for 2001.

These sections are described below:

PART A:
This section requires information relating to the MSW service area and MSW volume. This section seeks information in the following categories:

- Collection arrangement
- PAYT Preference (optional)
- MSW volume disposed at landfill or other final disposal site
- MSW volume recycled
- MSW volume composted (optional)
- MSW program service area population
- MSW program service area households
- Expected population growth (optional)
- Non-residential MSW customers (optional)

Most municipalities can contact their Mayor or Town Manager, Clerk-Treasurer or Controller, Street Department or Department of Public Works and Sanitation, or MSW collection and/or hauling contractor to gather this information.

PART B: MSW Program Costs
This section of the form seeks information on the costs a community incurs to provide residential MSW service. These costs are categorized as follows:

- Fixed trash collection costs
- Variable trash collection costs
- Fixed recycling program costs
- Variable recycling collection costs
- Additional MSW costs

Within each cost category communities should list physical facilities costs, salary expense (wages, benefits, etc.), vehicle expenses (debt service, maintenance, and operation), contractor expenses, administrative, as well as additional costs.

Each community has its own method for accounting and reporting MSW costs. Communities should feel free to add or omit information based on its own internal documentation.

It is not necessary to provide cost figures for each and every item listed on the form. ***The most important consideration when identifying program costs is that a community must identify any cost it wishes to finance using the PAYT rate structure.***

PART C: ***MSW Program Revenues***
This section seeks information on the sources used to pay for residential MSW service. Some communities may have a single financing source while others will use a combination of funding sources to pay for residential MSW service.

Communities should identify any and all revenue sources it wishes to replace through the PAYT financing mechanism. The proportion of MSW program costs to be financed from the PAYT rate structure will vary from community to community.

<u>Collection Arrangement will Influence Available Information</u>
It is not necessary—nor may it even be possible—for every MSW program to fully complete the PAYT Information Form. The availability of data is influenced by a municipality's involvement in municipal solid waste management. Generally, the greater the municipal involvement in MSW management the greater the volume and detail of information. The differences in availability of information are identified below:

Municipal Collection Programs:
Municipal MSW collection programs—those programs where government employees collect MSW using government-owned equipment—will have the most available information on the local MSW program.

Exclusive Contract Collection Programs:
Exclusive contract MSW programs—those communities, which hire private collection companies to exclusively provide residential MSW service—will have limited information available. Program costs are usually consolidated into a single billing amount on each monthly invoice. The amount of MSW volume data may be limited to reporting requirements found in contract agreements.

At a minimum, a contract collection community will need to have its contract collection company provide a "breakdown" of collection and disposal costs in order to complete the AISWMD PAYT MSW Information Form. Some collection companies may be resistant to expressly reporting the proportion of collection-to-disposal costs due to concerns over proprietary information. Communities should seek this information in an informal manner to reassure collection companies wishing to protect proprietary information.

In the event a community is unable to secure the collection-to-disposal proportion, the community can contact nearby MSW program managers to develop a "proxy measure." Nearby MSW programs that have a similar level of service, may be expected to have a similar collection-to-disposal costs ratio. If nearby communities with municipal collection programs have an average of "55% collection-to-45% disposal ratio" or "65%collection-to-35% disposal ratio" it is reasonable to assume a contract program operating in the same region would have a similar collection-to-disposal cost ratio.

Private Subscription Collection:
Private MSW collection companies offer subscription service in communities where there is no active government involvement in residential MSW collection. These communities will have only a minimal amount of information available for entry in the MSW Information Form. Indeed the only available information might be community data unless the municipality requires MSW data reporting as part of its MSW company licensing program. It will not be possible for private subscription collection programs to utilize the MSW Program Information Form for its investigations into PAYT.

In the event a private collection community were interested in PAYT, it would have to generate *prospective costs from which PAYT alternatives could be generated.* It would be inappropriate to complete the MSW Information Form using private subscription rates as the "costs" of an MSW service for the following reason:

> *Subscription costs are significantly higher than contract or municipal collection costs per household served. The reason for this is that private subscription programs involve multiple companies traversing the same geographic area to service just a fraction of the households in the service area. In economic terms, the non-exclusivity within the market contributes to higher costs and less efficient MSW collection.*

<u>Gathering Costs for a Prospective Residential MSW Program</u>
The IDEM-AISWMD PAYT Project was designed to assist communities consider the economic feasibility of PAYT financing. A working assumption of this project was that communities participating in this program ***would have existing residential MSW programs.*** As such, the program materials do not address situations where a community is considering establishing residential MSW service.

For those communities that do not have existing MSW programs, but are interested in PAYT, it is recommended that they work with local elected officials, regional solid waste management districts, and local MSW program managers to generate necessary cost

estimates. Communities should research existing programs to select the type of collection program and the level of service.

The PAYT Information Form can be used to assist in preparing budget estimates for prospective residential MSW programs, however, communities should be diligent in ensuring that efforts accurately identify program costs.

Indiana "Pay-As-You-Throw" Tool-Kit
Section 4: Considerations in PAYT Rate Structures

Introduction

Prior to actually developing alternative PAYT rate structures, local elected officials and MSW program managers need to consider how rate structure components can influence the impacts of the PAYT program. The selection of a PAYT rate structure is based on community preferences and MSW program service financing requirements. In the end, decision-makers must determine which PAYT rate structure is most appropriate for their community. This section discusses factors local elected officials and MSW program managers should consider when selecting an "appropriate" rate structure.

"Appropriateness" of the Rate Structure

The "appropriateness" of a prospective rate structure is the most important consideration when selecting a PAYT program. There is no "cookie-cutter" approach to PAYT financing. Rather, there is no limit to the number of potential PAYT rate structures a community might consider. However, the local decision-makers and MSW program managers must decide which alternative PAYT rate structure is the "best-fit" for a community. The "best-fit" for the community will emerge as the most appropriate rate structure.

Appropriateness is a determination that must be made by local decision-makers and MSW program managers. As evidenced by the great variety of programs in Indiana, the most appropriate rate structure in one community is not the most appropriate rate structure in another community.

Considerations of Rate Structure Appropriateness

There are several factors used to determine the "appropriateness" of a PAYT rate structure. The relative importance of each factor will vary based on a community's priorities as well as its community and financial conditions.

The factors for evaluating rate structure appropriateness are identified as:

- Adequacy of the Revenue Stream
- Stability of the Revenue Stream
- Fairness of Rate Structure
- Customer Convenience of the Rate Structure
- Administrative cost of the Rate Structure
- Proper Incentive for Waste Reduction and Recycling
- Combating "Fee Avoidance" and "Undesirable Diversion"

Each of these factors is discussed in the sections that follow:

Adequacy of the Revenue Stream

In order to be a successful PAYT program, the rate structure must raise the revenue necessary for the program components to be financed by the PAYT program. The adequacy of the revenue stream is, therefore, an important consideration in evaluating a PAYT rate structure.

Beyond assessing how a rate structure might raise revenue to fund current costs, a PAYT rate structure must be evaluated based on its revenue stream *after a program has reduced trash volume*. As discussed earlier, MSW program costs are comprised of fixed and variable costs. As trash volume declines, variable will be reduced however fixed costs will remain relatively constant. The PAYT rate structure must be designed in such a way that it raises adequate revenue to fund fixed costs as the volume of trash declines.

The adequacy of the rate structure should be evaluated using various trash reduction rates to assess how well the PAYT rates generate funds in various trash reduction scenarios.

Stability of the Revenue Stream

Stability of the rate structure refers to the "cash flow" generated. MSW program costs are not necessarily identical every month. Changes in the trash volume peaks in summer thereby increasing the costs. An appropriate PAYT rate structures are responsive to increases in trash volume in order to make sure cost spikes are met with revenue spikes.

A modified PAYT program that includes a monthly flat-rate user fee or General Fund support provides a stable revenue stream for the MSW program. "Unit-based" sticker programs will provide an inflow of cash when residents purchase a supply of stickers. During traditional low trash volume periods (late fall and winter) households will purchase fewer stickers. This can create a temporary revenue shortfall, as MSW programs must pay recurring fixed costs even when trash volume is low.

Stability of the revenue stream is not, perhaps, as significant a problem as adequacy of the revenue stream. But, local decision-makers and MSW program managers will need to budget appropriately to ensure the program can pay for MSW fixed costs during low trash volume periods.

Fairness of Rate Structure

No consideration is more important for gaining public acceptance of a PAYT rate structure than the perceived fairness of the rate structure. The appropriateness of a rate structure will rest, to a great extent, on the public's perception that the PAYT rates are fair. This perception is greatly influenced by the customs and traditions in a community. An important tradition to consider is the community's current financing for MSW program costs.

A community that funds its MSW from the General Fund will have a very different first impression of PAYT rates than a community that uses flat-rate user fees to pay for MSW service. Many General Fund MSW programs receive vociferous complaints that PAYT rates represent a "garbage tax." In a community that uses a flat-rate monthly garbage user

fee, PAYT may be embraced as being more equitable than charging the same fee when household trash generation varies from household to household.

For a community implementing a PAYT rate structure to replace private subscription service, the public response can be resoundingly positive since the municipal or exclusive contract PAYT rates are usually significantly lower than subscription rates charged by private MSW collection companies.

Components of Rate Structure Fairness:
Any community considering PAYT financing should pay special attention to three areas that are important in assessing "fairness." These are:

- Impact on senior citizens;
- Impact on low-income households; and,
- Impact on large families.

Senior citizens often enjoy the greatest financial benefit from PAYT rates when they are based on the volume of trash since these households are low-trash generators. Once this group is accurately informed of the economic benefits from lower trash volume, senior citizens often become strong supporters of PAYT financing.

Low-income households are often identified as negatively impacted constituencies for PAYT programs. However, waste generation studies have found that trash volume is directly related to affluence. Simply put, *the more a household spends, the more a household has to throw away.* Those familiar with household trash generation refer to the "low income argument" as a myth surrounding PAYT. However, most PAYT programs establish assistance programs linked to other social services programs to provide financial relief for low-income households.

Some PAYT proposals encounter objections based on concern for the financial impact on large families. This argument can be addressed by ensuring that recycling and waste reduction strategies are included in household education programs. The focus of this issue is the impact on large low-income families, which can be addressed through the low-income assistance provisions.

Regardless of the PAYT rate structure a community proposes, special attention must be paid to how well residents perceive the new rates as "punitive" rather than equitable. Shaping resident perceptions through a comprehensive public information and promotional campaign is an important aspect of the PAYT planning—not just the PAYT implementation—process.

<u>Convenience of the Rate Structure</u>
Another factor to be considered when evaluating PAYT rate structures is how convenient is the rate structure. Convenience for households refers to how easy the rate structure is to understand and in which it is to participate. Household convenience is not a superficial matter: Household convenience is important for public acceptance, as well as for the long-term sustainability of the project.

Local elected officials and MSW program managers need to ask, *"Is the PAYT rate structure too complicated for households to understand and follow?"* One method for ensuring customer convenience is to keep the program simple. Despite the variety of PAYT programs in Indiana, most elected officials and MSW program managers contend that their community's approach is simple.

The simplicity of the PAYT rate structure is evidenced by the "names" given to PAYT programs. Examples of easy to understand programs are listed below:

- Tell City's *Bag it and Tag it Program*,
- Winfield's *Two-Can Limit Program*,
- Syracuse's *Three Bag Program*,
- Monroe County's *Big Orange Bag* and *Little Orange Bag Program.*

Some communities have used modified PAYT programs to enhance customer convenience. In a modified program, a community one or more of the following features to facilitate customer convenience and public acceptance:

- Monthly base fee to finance fixed costs;
- Weekly trash set out limits to reduce inconvenience of buying stickers or bags for every trash can or bag;
- Continued reliance on General Fund resources to partially-finance program costs to keep fees to residents at a lower level; or,
- Pre-paid disposal stickers to allow households to "tag" trash without having to purchase stickers until the pre-paid supply is exhausted.

Bag and Can Limits:
The use of "bag limits" or "can limits" is very popular in Indiana. These limits greatly enhance PAYT program convenience because any household generating trash within the can limit does not have to purchase stickers or bags for extra trash.

Community decision-makers establish their individual trash can or bag limits based on their judgments about household set-outs and other information. Some Indiana PAYT programs have one, two, or three can trash limits. Households need to purchase special stickers only when the trash level exceeds the weekly set-out limit.

<u>Administrative Cost of the Rate Structure</u>
Administrative costs refer to the expenses associated with introducing and enforcing a PAYT rate structure. These costs are categorized as "start-up" and "operating" costs of the PAYT program.

Administrative "start-up" costs for a PAYT program include the following:

- Costs of specially-printed bags and/or tags;
- Costs of purchasing special containers for variable-sized PAYT programs;
- Costs of collection vehicles and equipment necessary for PAYT collections;
- Costs of a public and promotional program;
- Costs to establish a billing program or cost to modify an existing program; and,

- Costs associated with building recycling program capacity due to expected increase in recyclable materials volume;
- Costs of establishing a retail network for the sale of bags and stickers;
- Costs of developing the ordinances and documents necessary to introduce PAYT;
- Costs of training staff to enforce the policies and requirements of the PAYT rate structure.

Administrative "operating" costs for the PAYT program include the following:

- Costs of staff responsible for enforcing the PAYT structure related to processing payments, prosecuting dumping and non-payment incidents, and responding to PAYT complaints;
- Costs of maintaining the retail sales network;
- Costs of printing additional specially-printed bags and/or tags;
- Costs of on-going public information and promotional activities;
- Costs of monitoring PAYT program performance related to revenue generation and waste reduction.

Communities considering PAYT financing need to assess their ability to create and sustain the PAYT program. Communities that are already actively involved in residential MSW management are more readily able to incur the additional costs of a PAYT program. Communities should include the incremental administrative costs of a PAYT structure in their calculations of the economic feasibility of PAYT financing.

Incentive for Waste Reduction and Recycling

The previous section identified the administrative costs of PAYT programs. The administrative costs are offset by the avoided disposal costs that result from PAYT programs. It is, therefore, important for communities to consider how well a PAYT rate structure encourages households to modify their behavior and reduce trash set-outs.

PAYT rate structures do not, however, uniformly motivate households to reduce, reuse, and recycle. In assessing PAYT rate structures, elected officials and MSW program managers should evaluate how well the finance mechanism will produce the intended household behavior modifications that result in reduced trash volume.

Generally, unit-based programs are considered "more aggressive" than can-limit programs because they motivate households to reduce trash set-outs at even the first can or bag. Conversely, a three-can limit PAYT program—it can be argued—does not motivate households to reduce trash below the set-out limit. Similarly, a two-can limit is more aggressive than a three-can limit while a one-can limit is considered more aggressive than a two-can limit program.

Earlier in this document, the section addressing customer convenience reported that can limit programs are used to increase program convenience and public acceptance. Elected officials and MSW program managers need to balance convenience with waste reduction, reuse, and recycling incentives to ensure that a PAYT program delivers the cost-savings in terms of the avoided landfill costs. The challenge for those developing can limit programs

is to impose a trash set-out level that motivates households to reduce, reuse, and recycle without making the program overly burdensome.

While some PAYT programs are considered more aggressive than others are, research suggests that PAYT program relative performance is a function of program structure not PAYT fees. A Duke University study found that the prices for PAYT stickers and bags were not directly related to trash volume reductions. Stated another way, a PAYT program that charges $2.00 per bag or can will not have twice the waste reduction of a program charging $1.00 per bag. This research indicates that the existence of PAYT fees for trash promotes trash reduction independent of the actual prices charged.

Combating "Fee Avoidance" and "Undesirable Diversion"

Communities interested in PAYT financing should be aware of unwittingly encouraging residents to avoid paying PAYT fees and engaging in undesirable diversion. These behaviors can be devastating for PAYT programs since these behaviors reduce revenue while communities still incur the fixed costs for MSW program services.

"Cost avoidance" strategies that households use to avoid PAYT fees are identified as follows:

- Taking trash to work, taking trash to friends and relatives with unlimited trash service;
- Overstuffing garbage cans and bags to maximize the volume per unit in excess of program limits on pounds;
- Placing trash out without stickers in hopes that collection personnel will not notice; and,
- Placing trash into curbside recycling bin.

When households avoid paying costs through "undesirable diversion" means, there are impacts beyond lost revenue. These impacts involve negative environmental and societal impacts. "Undesirable diversion" includes the following behaviors:

- Dumping trash at drop-off recycling centers;
- Unauthorized use of business and institutional dumpsters, or roadside dumping;
- Trash burying and burning; and,
- Placing trash in alley containers or at with trash from other residential properties;

PAYT programs should be developed with an interest in discouraging these behaviors. Cities and towns have developed programs to combat "cost avoidance" and "undesirable diversion." Some of these PAYT program components include the following:

- Using can limits to reduce incentive for undesirable diversion;
- Distributing pre-paid disposal bags and stickers to households;
- Offering occasional or seasonal "trash amnesty days" to accommodate free disposal for trash peaks;
- Charging monthly user fee to ensure revenue stream to fund fixed costs;

- Actively promote enforcement of dumping ordinances and fines to make public aware of the penalties for undesirable diversion; and,
- Public prosecution of illegal dumpers and trash burners to demonstrate the penalties for undesirable diversion;

Elected officials and MSW program managers should pay close attention to cost avoidance and undesirable diversion for these two unintended outcomes can have devastating and very negative impacts on the MSW program.

PAYT Considerations Matrix

To facilitate comparisons between alternative rate structures, the Indiana "Pay-As-You-Throw" provides a matrix that can be used to assess PAYT rate performance on the factors identified in this section. This matrix is provided as Appendix C.

Indiana "Pay-As-You-Throw Tool-Kit
Section 5: Using Existing Methods to Develop PAYT Rates

Introduction

Once a community has identified the program components it wants to finance using PAYT and the costs of those program components, the community is ready to a begin developing potential PAYT rate structures. The rate structure development process is a deliberative and evolving process. This process involves identifying rate structure options that may be revised, refined or eliminated based on their appropriateness. A community will usually conduct several "rounds" of rate structure development before the "most appropriate" rate structure emerges.

This section will explain how communities can use existing PAYT rate structure development methods to consider alternative PAYT rate structures.

Major PAYT Rate Structure Alternatives

Indiana PAYT communities utilize one of three major rate structure types. These types are identified as:

(1) Unit-based Pricing Rate Structure (per unit fee for each can or bag of trash);
(2) Two-tiered Modified Rate Structure (monthly flat rate plus unit based disposal);
(3) Can-Limit Modified Rate Structure (monthly flat rate with weekly can limit and additional disposal fee for trash in excess of can limit).

The Indiana PAYT Tool-Kit will limit its rate structure development and evaluation to these PAYT rate structures because they are the most prevalent in Indiana. Notably absent are the variable-sized can subscription and pay-by-the-pound programs, which are not found in the state of Indiana.

Existing PAYT Rate Structure Development Methods

The US EPA has funded the development of three existing techniques for developing PAYT structures. These techniques are identified as:

(1) Pay-As-You-Throw Worksheets;
(2) "Price-Setter" Unit-based Pay-As-You-Throw Rate Software; and,
(3) "Rate Maker" MSW Utility Pay-As-You-Throw Rate Spreadsheets.

The Indiana "Pay-As-You-Throw" Tool-Kit will explain these rate-setting techniques. The US EPA has funded the development of a new rate setting method: the Indiana Modified Pay-As-You-Throw Rate Spreadsheets. This rate-setting method is the subject of the Indiana PAYT Tool-Kit's Section 6. Since this technique was developed specifically for Indiana communities, the Tool-Kit will devote a great deal of attention to the computer-based rate-setting technique.

US EPA PAYT Worksheets

The US EPA developed a series of worksheets to guide communities through the PAYT planning process. The complete series of worksheets is provided as Appendix D. Worksheet 5, which addresses Rate Structure Design, allows manual calculation of PAYT rates for a unit-based pricing program. Worksheet 5 is inserted following this page. The information required for completing Worksheet 5 is the same information necessary for the AISWMD PAYT Information Form.

The sections below describe the process for completing Worksheet 5.

Rate Structure Development Method #1: EPA PAYT Worksheet 5

Part A – Waste Collection Forecast

This section requires communities to input the following information to identify the expected trash volume for a PAYT unit-based program. The input required to calculate the formulae is listed below:

1. Current Waste Collection

By dividing the tons of waste collected in year prior to PAYT by the Current population in community this section allows communities to calculate the Tons of MSW Collected per Resident in the Base Year.

2. Community Growth

This section enables a community to calculate the annual increase in MSW based on projected increase in population.

3. Waste Collection Under Pay-As-You-Throw

This section requires a community to identify the expected trash reduction due to PAYT to assess the MSW volume expected following the introduction of PAYT.

NOTE: ***The projected decrease in MSW due to PAYT is of critical importance since an overly optimistic projection will result in underestimating the projection of MSW. Conversely, an overly conservative waste reduction projection will result in lower revenues than are necessary to fund MSW program costs.***

PART B – Program Costs

This section of Worksheet 5 requires communities to input the fixed and variable costs for trash collection, disposal, and recycling. Each section included in this part of Worksheet 5 is identified below:

1. Fixed MSW Collection and Disposal Costs per Month

This section requires communities to input various fixed costs associated with trash collection and disposal.

2. Variable MSW Collection and Disposal Costs per Month

This section seeks information on the costs that vary with the amount of trash collected and disposed by a community.

3. Total MSW Collection and Disposal per Month
This section simply calculates the sum of the fixed and variable trash program costs.

4. Fixed Recycling Collection and Processing Costs per Month
This section seeks cost information on the fixed costs associated with the collection and processing of recyclables. It does not matter if the recycling is collected curbside or through a drop-off program.

5. Variable Recycling Collection and Processing Costs per Month
This section requires communities to identify the variable costs for recycling collection and processing.

6. Total Recycling Collection and Processing Costs per Month
This section calculates the sum of the fixed and variable cost for the recycling collection and processing.

7. Total Cost of Pay-As-You-Throw and Complementary Programs
This section requires the sums generated in Sections 3 and 6, as well as adding the monthly cost of complementary programs.

NOTE: ***Administrative costs for the PAYT program should be included as a component of the complementary program expense.***

The final line in this section generates the sum of the trash, recycling, and complementary programs.

PART C – Program Revenues
This section enables communities to estimate the per-container price necessary to finance program costs. This section seeks information on a community's PAYT program type and disposal unit container size preference.

1. Container Selection and Capacity
This section asks a community to identify the PAYT program type (e.g., cans, bags, tags, or stickers) and the volume of disposal units. (The conversion factor for gallons to pounds, is 1-to-1. That is, a 32-gallon trash can or bag can hold 32 pounds of trash.)

2. Estimated Per-Container Price
This section requires input of the expected tons (Part A-3) and the weight per container (Part C-1) to calculate the number of containers expected under the PAYT program.

The second formula uses the total costs (Part B-7) divided by the number of containers (Part C-2) to calculate the per unit cost for each container to be thrown away.

NOTE: ***If a community is considering more than one container option, the community should complete this section for each container under consideration.***

PART D – Program Balance

Once a community has developed a "unit pricing" PAYT rate, a community needs to consider how well this "unit pricing" PAYT rate will finance program costs. Communities may wish to generate program revenues using different waste reduction scenarios to assess the performance of the PAYT rate structure in various settings.

If a community is not satisfied with the performance of the unit pricing PAYT rate, the rate should be adjusted and revenues recalculated to assess the efficacy of the rate structure in generating revenues.

Rate Structure Development Method #2: "Price-Setter" PAYT Rate Software

US EPA Region 1 funded the development of a computer-based software program to generate a unit-based PAYT rate structure. "Price-Setter" was developed by the New Hampshire Governor's Office of Recycling. This software streamlines the PAYT rate structure development and revenue generation process calculated manually using the prior section's EPA PAYT Worksheets.

Data for Input into "Price-Setter

"Price-Setter," which can be downloaded from the US EPA web site, requires communities to input the same information required for the EPA PAYT Worksheets. "Price-Setter" can develop PAYT for MSW programs with drop-off or curbside recycling service. A copy of the "Price-Setter" Data Input Spreadsheet is inserted immediately following this page. The inserted page is an example showing the data for the City of Hammond, which includes curbside recycling service. The section below discusses the informational requirements of "Price-Setter."

The "Price-Setter" Input Report includes community and MSW program information. The categories identified as ***"input"*** are entered by the user. Information that is calculated by "Price-Setter" is identified.

"Price-Setter" Municipal Information

The "Municipal Information" reflected in the Input Report is listed below:

- Year of data – ***input,***
- Municipality name- ***input,***
- Population - ***input***;
- Municipal Solid Waste (tons disposed) – ***input,***
- Municipal Solid Waste (tons recycled) – ***input,***
- Municipal Solid Waste (Total in tons) - ***input***
- Current Recycling Rate- *calculated,*

- Test Run Name – [Number for each PAYT rate alternative considered] - ***input***
- Estimated Population Growth - ***input***
- Estimated Inflation Rate - ***input***
- Estimated Manufacturing Cost per Unit - *calculated*

"Price-Setter" Municipal Solid Waste Expenses

The "Municipal Solid Waste Expenses" reflected in the second part of the "Price-Setter" Input Report is listed below:

- Tipping Fee [Entered for each year to be considered] - ***input***
- Collection costs [Entered for each year to be considered] - ***input***

NOTE: ***"Price-Setter" collection costs is a consolidated figure that includes the fixed and non-disposal variable costs for trash, recycling, and complementary programs used in the EPA PAYT Worksheet 5.***

The cost components may be entered individually or as a consolidated collection figure, as shown in the Hammond example.

Disposal Only PAYT Unit Pricing Options

Many Indiana PAYT programs wish to finance only the disposal costs through the PAYT program. This is especially true for rural drop-off PAYT programs. "Price-Setter" software may be used for generating these PAYT program options.

If a community only wishes to finance its disposal costs through the "unit-pricing" PAYT program, the user should input only the variable costs of the program. The "unit-pricing" PAYT options generated on page 2 of the software will only reflect those costs entered on page 1.

"Price-Setter" Municipal Solid Waste Revenues

The third section of the "Price-Setter" software seeks information on the "Municipal Solid Waste Revenues" for the community's program. This section allows the user to designate revenue sources and input the revenue generated from each source. The Hammond example includes three categories: monthly flat-rate user fees; proceeds from the sale of recyclables; and revenue distribution to Hammond raised from the Lake County Solid Waste Management District's special district property tax levy.

"Price-Setter" Solid Waste Variables

This section of the "Price-Setter" Input Report includes *optional* information relating to generating projections for the software's Output Report. These categories are:

- Estimated population growth rate [on an average annual basis]
- Estimated inflation rate [on an average annual basis]
- Estimated manufacturing cost per unit [on an average annual basis]
- Estimated waste reduction – as a percentage [User to input reduction for each year in the analysis]

NOTE: ***The estimated waste reduction is measured against the base year, not a reduction from the prior year. In the Hammond example, the City has projected a sustained 40% reduction from the base year trash volume.***

"Price-Setter" Curbside Output Report

The second page of the "Price-Setter" software package includes two types of figures. Most of the information shown is calculated by the software package itself. The only input is the "Specific Price Per Bag." The user enters this figure for each year considered in the analysis.

It should be noted that in years when the "Specific Price Per Bag" is less than the "Estimated Price per Bag" (highlighted in yellow in the software) the MSW program will show a deficit. It should be noted that the "Revenue Generated" refers to the revenue generated from the unit price of the trash disposal. If a community does not wish to fully-finance MSW program costs with its "unit-pricing" program, it should retain a "subsidy needed" in the amount of its other revenue source(s) to be used for a combination financing program. The user should save this version of the test run for future use.

Generating Multiple Unit-Pricing Options

If a community wishes to consider multiple "unit pricing" options, the user modify the "Test Run" name on page 1 of the "Price-Setter" software. Then, advance to page 2 and make the changes for other "unit-pricing" program options. Again, this option should be saved *under another Test Run Name* for future use. This process should be repeated for each additional unit-pricing option under consideration.

Rate Structure Development Method #3: "Rate-Maker" PAYT Rate Software

The City of Seattle has had PAYT financing for many years. It is one of the largest American cities with PAYT rates. Seattle's program uses a variable sized container PAYT option. The City developed an extensive software model to allow for accurately calculating PAYT rates.

The City's PAYT rate structure computer model is called, "Rate-Maker." This software approximates utility rate structure modeling used in electric, natural gas, water and sewer, or other utilities. This rate-setting method includes 182 pages of worksheets requiring extensive data entry that is used to calculate a multitude of MSW program indicators and cost factors.

There is no sample community data to present since no city or town in the Indiana PAYT Technical Assistance Project utilized "Rate-Maker" software program. A few spreadsheets from Rate-Maker are provided as Appendix E**.**

Designed for Larger MSW Programs

The level of detail required to execute "Rate-Maker" can only be found in a municipal collection MSW program. Some MSW experts have suggested that "Rate-Maker" is

appropriate for those municipal programs serving populations in excess of 100,000. Recently US EPA announced a grant-funded project to recruit large cities to use "Rate-Maker."

Communities interested in utilizing "Rate-Maker" for PAYT rate structure development and evaluation should contact EPA Region 5 representatives for additional information. As of this writing, there are only limited written materials available on "Rate-Maker."

Reviewing Existing PAYT Rate Structure Development Methods

This section has reviewed the existing PAYT rate structure development methods. The existing methods resulted in either, unit-based or multi-tiered PAYT rates. The EPA Worksheets and the "Price-Setter" software program developed unit-pricing programs, which are prevalent in New England and the Mid-Atlantic regions of the country.

"Rate-Maker" is capable of generating multi-tier "utility" MSW rate structures. Unfortunately the extensive MSW information requirements to run "Rate-Maker" coupled with the limited instruction available to negotiate the over 180 pages of the program has created a significant barrier to its wider utilization.

Based on the Indiana PAYT Technical Assistance project's participating communities' desire for modified PAYT rate structures coupled with relatively uncomplicated MSW program cost and program information, the consultant developed individual spreadsheets for each community. An additional issue was that most participating communities wanted to consider more than one rate structure type as part of the rate structure development and revenue generation process. This required the consultant to develop a spreadsheet that included multiple PAYT rate structure options. For these reasons, the consultant developed the Indiana Modified PAYT Rate Structure Spreadsheets to facilitate efficient consideration of multiple PAYT rate structures.

Indiana "Pay-As-You-Throw" Tool-Kit
Section 6: Indiana Modified PAYT Rate Spreadsheets

Background

When the Indiana PAYT Technical Assistance Program began, the only available rate-setting technique was the US EPA Worksheets. The consultant, therefore, began developing individual spreadsheets for each participating community. As the Indiana PAYT Technical Assistance Project continued, the consultant noted trends in the types of rate structures communities wished to evaluate.

In order to provide a project deliverable that would be available and valuable beyond the project period, the consultant and IDEM-OPPTA agreed to develop a computer-based PAYT rate structure development spreadsheet specifically for use by Indiana communities. The consultant developed this spreadsheet package to develop multiple alternative rate structures. These worksheets allow for consideration of multiple rate structure options within rate structure types. The worksheets allow for real-time calculation of program costs and program revenues to expedite rate structure evaluation.

Municipal Collection and Exclusive Contract Versions of Spreadsheets

PAYT financing is intended to create economic incentives to encourage households to reduce, reuse, and recycle. The community saves money as the cost to landfill trash is reduced. During the course of the AISWMD PAYT Technical Assistance Project, it became clear that not all programs have the same economic incentives to reduce waste. Based on the experiences of the Indiana PAYT Technical Assistance Project, collection arrangement influenced the potential cost savings resulting from PAYT financing.

It appears that exclusive contracts for residential MSW service generally limit if not negate economic advantages of PAYT financing. Most of these residential MSW contracts are not sensitive to changes in trash volume. This means that a community could introduce PAYT rates and successfully reduce household waste, but the city or town would not experience a reduction in MSW contract costs.

In order to allow an exclusive contract community to assess PAYT rates, the consultant developed a second spreadsheet, titled "Contract Modified PAYT." Communities with an exclusive contract for residential MSW—***that is not sensitive to changes in trash volume***—should use the contract version of the software. All other communities should use the Municipal Version of the spreadsheets.

Computer Requirements

These spreadsheets were developed using Lotus® computer software program. They require Lotus® computer software program or will need to be converted for use on another software platform.

Indiana Modified PAYT Spreadsheet Components

The Indiana Modified PAYT Rate Development Spreadsheets includes nine component worksheets. These Worksheets are identified as:

- Part A: MSW Characteristics
- Part B: MSW Program Costs
- Part C: MSW Program Revenues
- Part D: Base Year Cost of Service Rates
- Part E - Option A: Unit-Based PAYT Alternative Rates & Revenue Projection
- Part E - Option B: Fixed Monthly Rate and Unit Disposal Fee Rates & Revenues
- Part E - Option C: Two-Can Modified Rates & Revenues
- Part E - Option D: Three-Can Modified Rates & Revenues

Each worksheet requires various information that is used to calculate other indicators, rates, and revenue projections. The input cells for each spreadsheet are highlighted in blue. Black cells are "protected" and cannot be modified by the user. These protected cells contain formulae that are used to generate cost or revenue figures for use within the spreadsheet. They have been protected to prevent the accidental deletion of spreadsheet formulae or internal spreadsheet "look-ups." A complete set of these worksheets is provided as Appendix F.

The sections that follow detail the informational requirements of the Indiana Modified PAYT Rate Spreadsheets.

Input Required for Indiana Modified PAYT Spreadsheet Part A

The first spreadsheet seeks community and MSW characteristics. The user should input MSW components related to: landfilled volume (required), recycling volume, composting volume, leaf volume, as well as other diversion program volume. The spreadsheet will automatically calculate the total MSW and diversion rate.

The user is required to input the number of households served by the MSW program. The population is optional. The Indiana Modified PAYT Spreadsheet Part A will calculate MSW volume trash per household, diversion per household, and average weekly trash set out (in 30 pound cans) indicators. A copy of this worksheet is inserted immediately behind this page.

NOTE: ***The Indiana Modified PAYT Spreadsheets calculate PAYT costs and MSW indicators at the household level not a "per capita" basis.***

Input Required for Indiana Modified PAYT Spreadsheet Part B

Part B of the Indiana Modified PAYT Spreadsheet addresses MSW Program costs. These categories coincide with the cost information sought on the AISWMD MSW Information Form.

The cost categories used in Part B are listed below:

- Fixed Trash Collection Costs;
- Variable Trash Collection Costs;
- Variable Trash Disposal Costs;

- Fixed Recycling Costs;
- Variable Recycling Costs;
- Yard Waste Program Costs;
- Additional MSW Costs.

Using this input, the spreadsheet will calculate total costs in each category, Total MSW costs, Total MSW (less yard waste). The Total MSW (less yard waste) is the basis for calculating MSW "cost of service" rates later in the spreadsheet.

The spreadsheet will calculate household annual and monthly MSW indicators in the following areas:
- Trash collection,
- Trash disposal,
- Total trash service,
- Recycling fixed costs,
- Recycling variable costs,
- Yard waste/composting costs,
- MSW costs (without yard waste),
- MSW costs (including yard waste).

These indicators will not calculate values in categories where no cost figures are entered. A copy of Worksheet B is inserted behind this page.

The spreadsheet will also calculate indicators for the fixed and variable costs. These indicators are used later in the worksheet to calculate cost of service rates based on MSW program fixed and variable costs.

<u>Input Required for the Indiana Modified PAYT Spreadsheet Part C:</u>
The purpose of this section is to identify existing revenue sources used to finance current MSW program costs. Communities should identify as accurately as possible the revenues generated from revenue sources expressly to be supplanted by the PAYT rate structure.

This section asks users to identify revenue sources for the Base Year MSW Program. Categories include:
- General Fund/Property Tax Revenues,
- Trash User Fees,
- Recycling User Fees,
- Sale of Recyclables, and,
- Large item charges

Users may enter additional other revenue sources. A copy of Worksheet C is inserted behind Worksheet B.

Once the revenue sources are entered, the program will calculate the Total revenues. Communities wishing to develop fully-financed PAYT rates should verify that program

revenues meet or exceed MSW program costs to ensure that the MSW financing is accurate.

Input Required for the Indiana Modified PAYT Spreadsheet Part D:
This worksheet calculates the "cost of service" rates for the Base Year MSW Program costs. This worksheet utilizes information entered into previous spreadsheets to calculate these "cost of service" rates. This worksheet, therefore, requires no data input from the user. Communities not interested in pursuing PAYT financing can use this worksheet to generate "cost of service" rates and continue no further through the spreadsheet.

This worksheet provides four alternative "cost of service" rate indicators. These indicators are intended to give a community a sense of what PAYT rates might be for a community's current MSW program—assuming no changes in the MSW volume and MSW services. A copy of Worksheet D is inserted behind this page.

The four "cost of service" indicators, which approximate popular PAYT rate alternatives, as well as the formulae used to calculate the indicators are listed below:

Option A: Unit-Based Pricing = an indicator where fixed and variable MSW program costs are distributed across the total number of 30-pound trash disposal units. The formula for calculating a Unit-Based Price Indicator is:

Total MSW Program Costs / ((Landfill tonnage x 2000 pounds) / 30-pound units))

Option B: Fixed Costs and Variable Cost Components = an indicator that uses two rate components to fund fixed and variable costs. A "monthly flat-rate" component is used to finance fixed costs equally according to the number of households served. A variable cost component distributes all variable expenses to the 30-pound disposal units. The formula to calculate the flat rate monthly rate is:

(Total Fixed Costs / Number of Households) / 12 months

The formula for calculating the variable costs Unit-Based Pricing mechanism is:

Total Variable Costs / ((Landfill tonnage x 2000 pounds) / 30-pound units))

Option C: Two-Can Limit with Excess Trash Fee = this indicator shows the monthly flat rate to fund fixed costs, as well as provide two (2) 30-pound disposal units. The monthly flat-rate component includes the monthly flat rate amount from Option B and the equivalent of two disposal units per week. The formula for this option is shown below:

Option B (monthly flat rate) +((4.3 weeks x 2 cans) x Option B Unit-Price)

The fee for disposal units in excess of the weekly two-can limit is the same as the:

Option B Unit Price

Option D: Three-Can Limit with Excess Trash Fee = this indicator provides the equivalent price including a flat monthly rate to fund fixed costs, as well as including three (3) 30-pound disposal units. This is the equivalent of the Option B monthly rate and 3 disposal units per week. The formula for this option is shown below:

Option B (monthly flat rate) + ((4.3weeks x 3 cans) x Option B Unit Price)

The fee for additional trash units beyond the three can limit is the:

Option B Unit Price

Communities wishing to develop PAYT rate alternatives and evaluate resulting revenue streams should continue to Part E of the Indiana Modified PAYT Rate Spreadsheet. Communities simply wishing to analyze "cost of service" rates have no need to continue beyond this point.

Indiana Modified PAYT Rate Spreadsheets Part E

This part of the Indiana Modified PAYT Rate Spreadsheets is used to develop and evaluate alternative PAYT rate structures. This section is actually four worksheets, one for each of the PAYT rate structure options shown in Part D of the spreadsheet.

The worksheets and their corresponding PAYT structure are shown below:

- Worksheet Part E – Option A: Unit-based PAYT,
- Worksheet Part E – Option B: Flat-rate Monthly and Variable-based Disposal,
- Worksheet Part E – Option C: Two-Can Limit Modified PAYT and Extra Disposal, and
- Worksheet Part E – Option D: Three-Can Limit Modified PAYT and Extra Disposal.

Each of these worksheets allows users to enter various fees, waste reduction levels, excess stickers, and administrative costs. The worksheets will automatically calculate revenue projections and determine the surplus or deficit from the rate structure.

Indiana Modified PAYT Rate Spreadsheet Part E- Option A:

This option allows a community to develop unit-pricing rate structures and evaluate revenue projections. This worksheet allows comparisons between four unit-price PAYT rate structures. A copy of this Worksheet is inserted behind this page.

Input Required for Indiana Modified PAYT Rate Spreadsheet Part E- Option A:

The input to be entered by the user is listed below:

- Disposal unit size (in pounds) [default value is 30 lb.]
- Administrative costs of PAYT,
- Reduction percentage, and,
- Unit price for the rate.

[Those using the Contract version of the spreadsheet must manually enter the contract cost since the contract fee will not be reduced in response to reductions in trash volume.]

Once this information is entered, the user can compare the revenue streams of the four unit pricing alternatives.

NOTE: The user should "save" the Indiana Modified PAYT Spreadsheet after completing each data entry session to avoid having to re-enter data.

Impact of Waste Reduction:
Reducing the amount of household MSW is the goal for a PAYT program. However, this waste reduction can be a mixed blessing. If a community underestimates the waste reduction of the PAYT program, the revenue stream will not meet the program costs.

Revenue Stream Concerns of Unit-Pricing Systems:
The reason for the revenue stream issues that can result in unit-pricing PAYT programs is economic: Unit-pricing PAYT programs finance the fixed costs of MSW programs with a variable pricing mechanism. Unit-pricing methods will accurately fund the variable costs of the MSW program. These programs, if they result in waste reduction—or cost avoidance behaviors—beyond a community's projections, MSW program fixed costs will not be funded as planned.

Another concern of unit-pricing programs is that if the projected waste volume is lower than the actual trash volume, the unit-pricing program will generate revenues in excess of program costs. While this result does not produce a financial crisis, it can result in a political complication. PAYT program opponents will cite the program surplus as proof that the PAYT rates are exorbitant and punitive. Communities that experience revenues in excess of MSW program costs should be prepared for the public relations "fall-out" that may ensue.

<u>Best Application of Unit-Pricing</u>
In economic terms, the best applications for "unit-pricing" PAYT rate structures are where MSW programs are funding variable costs only. Successful unit-pricing MSW programs are those that finance variable disposal costs—and, possibly partially finance fixed costs—only. Examples of successful unit-pricing programs are rural drop-off programs where no fixed collection costs are included in program costs.

Town of Hebron Case Study:
The Town of Hebron established a "unit-based" PAYT program in July 1995. This contract collection community experienced the revenue stream shortfall problem identified

above. During the first year of the unit-pricing PAYT program, program revenues did not meet the revenue requirements to fund the contract's fixed costs.

This community was committed to using PAYT financing and revisited its rate structure to correct the revenue stream issue. In 1996, the Town of Hebron implemented a combination PAYT program that included a fixed cost component with a unit-fee for each disposal unit. This type of PAYT rate structure is demonstrated in Worksheet E – Option B.

Indiana Modified PAYT Rate Spreadsheet Part E – Option B:

Background

Indiana Modified PAYT Rate Spreadsheet Part E – Option B allows the user to develop and evaluate various rate structures that include a flat-rate component for fixed costs and a variable-rate component to finance volume-based costs. From an economic standpoint this is the ideal PAYT structure, for this rate structure type links pricing mechanism to cost factors. This rate structure type protects a community from the revenue stream risks of a unit-pricing system. This rate structure type minimizes the financial problems associated with "cost-avoidance" by limiting the types of costs a household can avoid.

To review, this rate structure type includes two components:

(1) A fixed-rate user fee, usually imposed monthly, to raise revenue necessary to finance fixed costs; and,
(2) A variable-rate user fee—a disposal unit fee—imposed on each and every bag or can of trash generated by households.

The most important consideration in this rate structure approach is that a community has accurately isolated fixed costs from variable costs. To improperly categorize program costs will create the potential for revenue stream problems. (Refer to Indiana PAYT "Tool-Kit" Sections 2 & 3 for discussions of fixed and variable costs.)

Input Required for Indiana Modified PAYT Rate Spreadsheet Part E- Option B:

This Worksheet enables the user to consider four rate structure options at the same time. The Worksheet requires the user to enter the following information:

- Disposal unit size (in pounds) [default value of 30 lb.]
- PAYT Administrative costs;
- Projected waste reduction for the PAYT program—for up to four options;
- Monthly flat-rate monthly user fee—for up to four options;
- Disposal unit fee—for up to four options.

[NOTE: Communities with an MSW collection contract with fixed costs will need to enter the additional input of "Contract Cost." The user should note that program cost reductions—cost savings accruing to the contractor—will be calculated.]

Calculations Made by the Worksheet

Spreadsheet E – Option B will automatically calculate the following information for up to four rate structure options:

- Revenue projections (monthly and weekly) from the monthly flat-rate user fee;
- Revenue generated from the sale of disposal units;
- Total program revenue on an annual basis;
- Total program costs—adjusted to reflect the waste reduction entered for each option; and,
- The resulting revenue surplus or shortfall (shown in parentheses).

[NOTE: The worksheet will use the contracts cost for communities with "locked-in" collection costs as the "program costs" and calculate the surplus or shortfall based on this number.]

The user can modify the monthly flat-rate user fee and disposal unit cost to balance the revenues and costs.

Indiana Modified PAYT Rate Spreadsheet Part E- Option C:

Background

This Worksheet considers the program costs and revenues from a modified PAYT rate structure that includes two disposal units per week. A "Two-Can Limit" program was cited earlier as more convenient to customers than rate structure options A and B, which require households to purchase stickers or special bags for each and every can of bag of trash.

Like Option B, this rate structure type includes two components. These components are identified as:

(1) A monthly flat-rate user fee that raises revenue to cover fixed costs and includes pre-paid disposal for two disposal units each week; and,
(2) A fee for disposal units in excess of the two-can weekly trash limit.

This worksheet looks very different from Option A or Option B. The inclusion of pre-paid disposal units in the rate structure creates a complication for calculating the program costs and revenues. Specifically, the Worksheet must calculate the number of excess units to be generated (and purchased). This requires the Worksheet to subtract the included disposal units (those two-cans per week per household that are pre-paid in the monthly rate) from the total number of 30-pound disposal units to be generated.

To review, a two-can limit modified PAYT rate structure is considered less aggressive than those rate structures found in Option A and Option B. This is due to the fact that a two-can limit program may not motivate households that generate one or two cans of trash to reduce their trash volume. For this reason, the Worksheet includes pre-set waste reduction levels that are relatively lower than the average trash reduction generally associated with PAYT programs.

Input Required for the Indiana Modified PAYT Rate Spreadsheet Part E – Option C

The input required from a user is different from the previous rate structures in order to reflect more accurately household trash set out patterns. This Worksheet enables the user to consider seven different scenarios at the same time. However, the projected waste reduction for each alternative is fixed, ranging from 10% to 40%.

The input required to complete Worksheet Part E – Option C is identified as:

- Base Year (pre-PAYT) household trash can set-out level distribution;
- PAYT Administrative costs;
- Monthly flat-rate – for every option in the Worksheet;
- Unit disposal fee – for every option in the Worksheet; and
- Unit sales of disposal units – in excess of those included.

[NOTE: Those communities with MSW collection contracts with "locked-in" contract costs, are required to input the contract costs. This figure is fixed regardless of actual cost savings resulting from reduced trash volume associated with PAYT financing]

The new input categories for this worksheet are described below.

Base Year Household Trash Can Set-out Level = this new information is required in order to assess how many—if any at all—additional disposal units may be purchased. Theoretically, households generating trash at the one or two can level *will never need to purchase additional disposal units*. Conversely, households generating trash at higher levels will need to purchase additional disposal units.

Unit Sales of Additional Disposal Units = This is a user-supplied input since, in many scenarios, there may be no additional disposal units projected, identified as "Excess Units" in the worksheet. This is due to the fact that the two-can limit includes a certain number of disposal units. If the trash reduction due to PAYT is at a level that reduces the number of disposal units below the included disposal units, there will be no sales of additional disposal units. If the "Excess Units" figure is shown in parentheses, there are no sales projected. The user may enter a cautiously-determined number of disposal unit sales or enter "0" where no additional sales are projected.

Calculations Made by the Worksheet

Just as the Part E – Option C worksheet is designed differently from the previous worksheets, so too are the calculations in this worksheet different from previous options.

The calculations performed by this worksheet are identified as:

- Base Year disposal unit generation based on household set-out level;
- Number of disposal units generated based on different trash reduction levels used in each scenario;
- Revenue generated from the monthly flat-rate user fee (on a monthly and annual basis);
- Revenue generated from the sale of additional disposal units- if any;
- Program costs; and,

- MSW program surplus or shortfall (deficit shown in parentheses).

In communities where the average household trash set-out is relatively low in the Base Year, the number of additional disposal units may be few or none at all. These communities should bear in mind that including two pre-paid disposal units in the monthly flat-rate fee may result in overcharging households that generate less than two 30-pound containers each week. Where few, if any, additional disposal units are projected, communities may wish to utilize the PAYT rate structure type found in Option B.

Indiana Modified PAYT Rate Spreadsheet Part E- Option D:

This Worksheet is used to develop and evaluate PAYT options similar to Option C. Like Option C, this rate structure type includes two components. These components are identified as:

(1) A monthly flat-rate user fee that raises revenue to cover fixed costs and includes pre-paid disposal for three disposal units each week; and,
(2) A fee for disposal units in excess of the two-can weekly trash limit.

The Worksheet design is identical to the design of Option C. This worksheet includes the same input from the user. The input is identified as:

- Base Year (pre-PAYT) household trash can set-out level distribution;
- PAYT Administrative costs;
- Monthly flat-rate – for every option in the Worksheet;
- Unit disposal fee – for every option in the Worksheet; and
- Unit sales of disposal units – in excess of those included.

The number of disposal units included in Option D is 50% higher than the number found in Option C's Two-Can limit program. Because more disposal units are included in Option D than found in Option C, the present PAYT rate structure option is considered less aggressive than Option C. This is because theoretically, Option D does not encourage households generating at three cans of trash or less to reduce, reuse or recycle.

Calculations Made by the Worksheet

Just as the Part E – Option D worksheet is identical to Part E – Option C, so too are the calculations in this worksheet identical to the previous PAYT rate structure option.

The calculations performed by this worksheet are identified as:

- Base Year disposal unit generation based on household set-out level;
- Number of disposal units generated based on different trash reduction levels used in each scenario;
- Revenue generated from the monthly flat-rate user fee (on a monthly and annual basis);
- Revenue generated from the sale of additional disposal units- if any;
- Program costs; and,
- MSW program surplus or shortfall (deficit shown in parentheses).

Three-Can Limit Programs Generate Revenue in Excess of Costs

The three can option charges each household for the disposal of three cans of trash regardless of the actual trash generated. The Three-Can limit program can be problematic if the Pre-PAYT average household trash level is relatively low. In this way, a three can program usually generates revenue in excess of costs since most households will generate less than this amount on an average basis.

An Unintended Negative Incentive to the Three R's

An added criticism of a three-can limit program is that it may –over time—result in higher trash volume since some households can cease recycling, reusing, or reducing without any penalty for doing so. Theoretically, households may stop recycling, reusing, or reducing as long as these changes do not lead to trash set-outs in excess of the three-can limit. It should be pointed out that this unintended negative response to a three-can PAYT program has not been documented.

Financial Implications of a Negative Incentive

If households respond to the three-can limit program by increasing their trash level to the three-can limit, the MSW program will not experience the financial shortfall discussed in relation to a unit-pricing program. However, a community can experience a increase from Base Year MSW program costs increase if the three-can limit results in a higher trash volume than the base year.

Completing Multiple PAYT Rate Development Options

The user should save the Indiana Modified PAYT spreadsheets after completing any data entry session. If a community wishes to use the spreadsheets to consider additional PAYT rate structures, the user should save the spreadsheet under a different name. Using the renamed spreadsheet, the user may alter PAYT rate structure data without re-entering program cost and MSW volume data.

Indiana "Pay-As-You-Throw" Tool-Kit:
Section 7: Implementing "PAYT" and Addressing Barriers

Introduction

Before a community can implement PAYT financing for MSW it must develop a PAYT program proposal. This PAYT program proposal includes two major elements identified as:

(1) The most appropriate PAYT rate structure; and,
(2) A PAYT implementation plan.

This section of the Indiana PAYT Tool-Kit provides guidance for selecting the most appropriate rate structure and developing a PAYT implementation plan. The Implementation Plan includes strategies for addressing barriers to PAYT implementation.

Selecting the Most Appropriate PAYT Rate Structure

Once a community has developed and evaluated various PAYT rate structure alternatives, it must decide on a single rate structure. To facilitate the selection of a rate structure option, communities should use the Rate Structure Appropriateness matrix. This matrix is provided as Appendix C.

By comparing the composite scores of various PAYT rate structures, elected officials and MSW program managers can discern the most appropriate PAYT rate structure for the community.

In the end, the selection of a specific PAYT rate structure must be made in the context of the individual community. This decision rests with the local elected officials and MSW program managers. It is they who will—indeed, must—lead efforts to build support and implement a PAYT rate structure.

Developing an Implementation Plan

Planning to implement a PAYT rate structure involves more than developing the necessary ordinances and infrastructure to begin imposing the PAYT rate structure. While these issues are important, successful PAYT MSW programs are designed to address potential obstacles that can block PAYT implementation.

The US EPA PAYT Tool-Kit and the literature of PAYT identify several "barriers" that can threaten the implementation and sustainability of PAYT programs. These "barriers" are identified as:

- Undesirable diversion (illegal roadside dumping, unauthorized use of dumpsters);
- Multi-family housing;
- Low-income households;
- Revenue stream issues;
- Occasional special collections and bulk items; and
- Rate structure regressivity and hidden tax issues.

These issues are "barriers" to PAYT implementation because some residents and elected officials believe the negative consequences of these issues offset any benefits resulting from the PAYT program proposal. Communities need to consider these "barriers" and possibly refine the PAYT program proposal in order to increase elected official and public support for the PAYT proposal.

Strategies for Addressing Undesirable Diversion

"Undesirable diversion" is a term coined by Norman Crampton, former Director of the Indiana Institute for Recycling. It refers to any behavior that reduces MSW volume through illegal, environmentally-irresponsible, or socially unacceptable method.

IDEM-OPPTA's Recycling Branch Manager Robert Gedert suggests that concerns over undesirable diversion are often ill-founded. Gedert cites MSW research that found no increase in undesirable diversion following the implementation of PAYT programs. What seems clear is that PAYT program opponents *will notice* undesirable diversion after PAYT implementation even when a community had dumping, burning, and burying prior to PAYT.

Examples of undesirable diversion are identified as:

- Illegal roadside dumping;
- Unauthorized use of commercial or institutional dumpsters;
- Contaminating recycling containers (curbside or drop-off) with trash;
- Burning trash;
- Burying trash; or,
- Taking trash to work or to the homes of relatives with unlimited trash service.

Gedert urges a direct approach when addressing concerns over undesirable diversion. He suggests elected officials and MSW program managers educate the public about the "myths" of dumping.

To reassure citizens that the community is serious about preventing illegal dumping, communities should develop and enforce Anti-Dumping Ordinances. Some communities have hired "Compliance Officers" to enforce dumping ordinances while others have placed this duty with existing Code Inspectors.

In addition to any negative societal and environmental consequences of undesirable diversion, these behaviors have negative financial impacts since households effectively avoid paying for MSW program costs.

Strategies for Addressing Multi-Family Housing

Just as multi-family has posed complications for residential recycling programs, so too does it present challenges for PAYT MSW programs. Because multi-family housing units do not have an individual set-out location, it is difficult to implement can-limit programs. An additional complication is that multi-family housing property residents believe that trash service is already included in rental agreements.

Many communities address the potential barrier posed by multi-family housing by excluding these properties from the municipal collection or contract program. By requiring a property owner to establish commercial disposal service can be seen as implementing volume-based MSW service.

Other communities have advanced "bag" programs for multi-family housing. These programs operate similarly to rural PAYT drop-off programs where households purchase special bags in order to dispose trash in a community collection container. The difficulty with such a program is that it requires rigorous enforcement to ensure households are using the bags, as well as to ensure that non-residents are not using the dumpster illegally.

Townhouse developments can be included in PAYT programs with little problem. If a property has frontage along a city-maintained right-of-way, it generally has a designation trash set-out location. Where there is a designated trash set-out location, a can limit, PAYT program stickers or bags can be monitored and enforced.

Multi-family Housing Issues Encountered During the Indiana PAYT Project

The Indiana PAYT Technical Assistance project encountered two multi-family housing situations that had to be addressed. These were:

(1) Older communities where single-family homes were divided—without permitting—into two or more units;
(2) Multi-family developments with private roads; and,
(3) Provision of MSW service to some but not all apartments within the community.

How each situation was resolved is described below.

In older communities, larger houses may be divided into two-flats or three-flats. In some cases, these buildings are not officially permitted multi-family structures. These buildings are problematic since they may have a single water meter and would not pay their fair share of program costs in a modified PAYT program. This community, which was interested in a can-limit PAYT program, expected to detect such properties as they requested service in excess of the can limit allowed for a single household.

One community had traditionally provided residential MSW service to a trailer home park. The units within this development did not have frontage along a municipally-maintained right-of-way, which is usually a requirement for inclusion in a government-organized collection program. This community halted its plans to implement PAYT and undertake a comprehensive review of its municipal MSW program. The community felt it was necessary to remove such properties from its service population prior to implementing PAYT.

When one community was compiling its list of residential MSW customers, it learned that service was being provided to some—but not all—apartment complexes. Removing the apartments from the government MSW program was considered a greater priority than

implementing PAYT rates. This community has suspended PAYT planning efforts until addressing this multi-family issue.

The Indiana PAYT Technical Assistance project demonstrates that multi-family housing presents problems for residential MSW programs in general, *not simply problems for PAYT program implementation.* To the extent that a community has problems with unpermitted multi-family housing, or is inconsistent in its service to multi-family housing, the community will have problems introducing PAYT to multi-family housing developments.

To the extent that PAYT planning efforts prompts communities to address these problems, PAYT planning can improve MSW service within these communities.

Strategies for Addressing Low-Income Households

This concern is often termed a "myth" since research shows that household trash generation is directly related to household income. For this reason, efforts should be made to educate the public that PAYT will not significantly negatively impact low income households.

Even though research does not support this as a legitimate problem of PAYT programs, elected officials and MSW program managers should be prepared for program opponents to politicize this concern to the point where it can threaten PAYT program implementation.

To avoid the perception that PAYT will adversely impact low-income households, PAYT program proposals should include ways to provide financial assistance to low-income groups. Some strategies are identified as:

- Providing a supply of trash stickers or bags to social services offices to distribute these to needy families;
- Provide reduced rate(s) to households considered low to moderate income;
- Provide rate relief or refunds to households on a sliding scale using income guidelines developed for the WIC or other government assistance programs; or,
- Provide a Senior Citizens rate to offer reduced rates for older citizens without regard to income.

While concerns that low-income households are adversely impacted by PAYT rate structures may be more myth than reality, building public acceptance for a PAYT program generally requires making some provisions for low-income households. These efforts are easily implemented by linking PAYT relief to existing assistance program in the community.

Strategies to Address Rate Structure Issues

The Indiana PAYT Tool-Kit has devoted a great deal of attention to ensuring that the PAYT rate structure will generate program revenues sufficient to meet program costs. However, it is not enough that the elected officials and MSW program managers believe the PAYT rate structure is appropriate.

Elected officials and MSW program managers need to communicate the PAYT rate structure components and the projected revenues to the public. This is especially true since some residents may be aware of highly-publicized PAYT failures due to program revenue problems. The key to any message should aim to reassure that the community has developed a sustainable rate structure that will not necessitate annual increasing in fees.

Some communities find that fully-funded PAYT rate structures are too much of a shock to households. When possible, these communities can use General Fund revenues to supplement the PAYT rate structure to reduce the fees paid by households. Many Indiana PAYT communities have continued to rely on the General Fund to keep PAYT rates low enough to gain public support for the program.

Strategies to Address Regressivity and Hidden Tax Issues

Many PAYT program proposals have been met by complaints from residents about the negative tax impact of PAYT trash rates. These tax-related complaints represent the final "barrier" to PAYT implementation.

Examples of tax-related complaints include the following:

- Loss of deductibility of MSW program costs as user fees are not deductible for federal or state income tax purposes;
- Regressivity of garbage fees—adverse impact on low-income households;
- PAYT rates will generate additional municipal revenue and households will not see a reduction in property tax rates; and,
- PAYT constitute punitive "garbage taxes" on households that choose not to reduce, reuse, and recycle.

These complaints are generally more acute in communities that finance MSW program costs exclusively from the General Fund. Some residents in these communities express an "entitlement" to residential MSW service.

Strategies to address these concerns include communicating the financial advantages—to individual households—from the rate structure. Specifically, these public information messages should convey the economic rewards that accrue to households that reduce, reuse, and recycle. An additional message to be conveyed is that the PAYT program does not mandate recycling. Households are free to choose not to reduce, reuse, and recycle. Households that make these choices—choices that result in increased use of landfill space-ought to bear the costs of their consumption of landfill space.

Some communities pursue PAYT for MSW programs to prevent crowding-out essential services from the overburdened property tax system. When the PAYT program revenues reduce reliance on the General Fund, elected officials and MSW program managers should be prepared to explain what the municipality will do with the excess revenues. When asked this question in a public hearing on PAYT, one elected official joked that the excess revenue would finance his salary increase. Those in attendance did not see the humor in the response and failed to support the PAYT initiative.

A successful strategy to address this concern is to specify how excess General Fund resources will be spent. One community committed to provide the excess revenue to emergency services. Another community calculated how many additional police officers could be hired if the City adopted PAYT financing for residential MSW service.

Additional "Barrier" for MSW Contract Communities

To this point, the discussion of "barriers" has addressed all proposed PAYT rate structures for residential MSW service. Communities with contracted MSW service must be aware of an additional barrier: MSW Collection Company resistance to PAYT financing for residential service.

This barrier is experienced in two ways:

(1) MSW collection company will not submit bid prices for a municipal contract; or
(2) MSW collection company will submit PAYT rate prices that are not economically-advantageous for the community.

In a contract MSW program, a community develops specifications for residential MSW service and private MSW collection companies provide "bid prices" for the service. A barrier to PAYT implementation is encountered when private MSW companies fail to bid on a contract or offer service pricing that does not provide economic incentives for implementing PAYT rates.

Some communities in Indiana have encountered this barrier when private MSW collection companies submitted "unlimited trash service" rates that were cheaper than PAYT rate service options. Regardless of elected official and MSW program manager commitment to PAYT financing, it is difficult to implement PAYT rates if they are more expensive than unlimited residential MSW service program costs. To review, for many communities, PAYT rates are pursued to reduce MSW program costs. When unlimited trash service costs are cheaper than PAYT trash service rates, it is politically difficult to proceed with PAYT program implementation.

The only strategy to combat this is a proactive approach by elected officials and MSW program managers. These individuals must work with private MSW collection companies to encourage them to participate in a PAYT MSW program. Generally, MSW companies will provide PAYT service rates that offer cost savings over unlimited trash service prices. However, a community must be prepared for the eventuality that a private MSW collection company may be unwilling to participate in a residential PAYT program.

According to an MSW company contract representative, private companies need reassurance that the PAYT program will not place unnecessary risks on the service providers. According to this company representative, these risks can be minimized through:

- limiting household opportunities for "cost-avoidance;"
- municipal responsibility for non-payment of service; and
- municipal sharing of administrative costs.

Based on the successful PAYT contract collection programs found across Indiana, it is clear that the vast majority of collection companies are willing to handle PAYT residential service contracts. Communities need to work cooperatively with prospective MSW collection companies to ensure sustainable contract PAYT programs.

Importance of Planning to Address Barriers

Communities interested in PAYT financing for residential MSW service should devote as much time and attention to potential barriers as it does to developing an appropriate PAYT rate structure type.

MSW literature is replete with examples of communities that dedicated itself to developing "the best" PAYT rate structure only to have the proposal rejected due to public and elected official concerns over the "barriers" identified in this section. Successful PAYT rate structure planning involves careful consideration of barriers, community considerations, and MSW program considerations to find the "best fit" for a community.

In the final analysis, finding the "best fit" in a PAYT rate structure requires elected officials and MSW program managers to find a PAYT program proposal that is both implementable and sustainable.

Indiana "Pay-As-You-Throw" Tool-Kit:
Section 8: Conclusion and Implications for Future PAYT Efforts